sewage be warm or cold, great or small, thereby preventing its power to force the trap connections of houses with which the sewer may be connected.

It is desirable that means of access to and inspection of all the parts of a sewer be provided by the construction of *man holes* and *lamp-holes* at short intervals along its course, and they may be constructed so as to serve in a dual capacity, and act as ventilating shafts, thereby greatly assisting to obtain the desired ventilation.

DEPTH TO WHICH SEWERS SHOULD BE LAID.

This is a local consideration, dependent upon the nature of the soil and other characteristics of the locality to be sewered. They should, in all cases, be at sufficient depth to secure the proper gradient of house drains to the rear of the dwellings along their course, so that for sites of great irregularity of contour they should be laid at a greater depth than for localities of a gently rolling or level surface.

Since no branch from a sewer should be made by a vertical connection, it will be seen that an unnecessary depth of the sewers is a useless additional cost, both to the main sewers and to the house connections, so that the minimum allowable depth of sewers should be carefully determined according to the surrounding conditions.

Upon this subject there is a paragraph contained in my report upon the sewerage of the city of Raleigh, which, I think, will bear repetition here, as follows:

"In determining the minimum depth to which the sewers shall be laid, I have departed from the general custom of laying the sewers to such depth as to drain cellars, and have no provision for cellar service. The advantages to be derived from cellar service in sewer pipes is the drainage of wet or flooded cellars in wet weather, and permitting the placing of hopper-closets in damp, dark, out-of-the-way places in cellars. While these may be advantages, the first, at least, they are attended by very great disadvantages and objections. The sewers, in many cases, must be laid to nearly twice the depth to provide cellar service—more than doubling the cost of construction. The limited extent to which cellars are liable to be flooded in this city, I do not think would justify such increased expenditure. The great objection, however, to such service—and I deem it a very serious one—is the provision and encouragement that it gives for placing hopper-closets in cellars. In such a climate as this, such a practice would be extremely dangerous. Closets, to be maintained healthfully, must have an abundance of the great purifying elements—sunlight and fresh air. In the dark corners of cellars they can have neither of these, and in the warm season (considering human carelessness) I see but little to prevent them from becoming very hot-beds of disease germs—a constant menace not only to those